Variable speed drives
Altivar 61
Option: Encoder interface cards

Presentation

VW3 A3 401

Encoder interface cards are used for application safety, irrespective of the control type:
■ Overspeed detection
■ Load slip detection

Three types of card are available, depending on the encoder technology:
■ RS 422 compatible differential outputs
■ Open collector outputs (NPN)
■ Push-pull outputs

The Altivar 61 variable speed drive can only take one encoder interface card. Please refer to the compatibility table on page 60674/11.

The encoder interface card is inserted into a dedicated slot.

It is protected against overloads and short-circuits.

References

Description	For use with encoder (1)	Voltage	Maximum current	Maximum cable length	Maximum operating frequency	Reference	Weight
		V	mA	m	kHz		kg
Encoder interface cards with RS422 compatible differential outputs	XCC 1●●●●●●●X XCC 1●●●●●●●R XCC 1●●●●●●●RN	5	200	50	300	**VW3 A3 401**	0.200
Encoder interface cards with open collector outputs	–	12	175	500	300	**VW3 A3 403**	0.200
		15	175	500	300	**VW3 A3 404**	0.200
Encoder interface cards with push-pull outputs	XCC 1●●●●●●●Y	12	175	500	300	**VW3 A3 405**	0.200
	XCC 1●●●●●●●K	15	175	500	300	**VW3 A3 406**	0.200
	XCC 1●●●●●●●KN	24	100	500	300	**VW3 A3 407**	0.200

(1) To obtain the complete reference of the encoder, please consult our "Rotary encoders - Osicoder®" specialist catalogue or our website "www.schneider-electric.com".

Variable speed drives
Altivar 61
Option: I/O extension cards

Presentation

PF121620

VW3 A3 202

Altivar 61 variable speed drives to be adapted for more complex or more extensive applications by installing I/O extension cards.

Two models are available:
■ Card with logic I/O featuring:
□ 1 relay logic output ("C/O" contact)
□ 4 x 24 V ⎓ positive or negative logic inputs
□ 2 x 24 V ⎓ open collector positive or negative logic outputs
□ 1 input for 6 PTC probes *(1)*.

■ Card with extended I/O featuring:
□ 1 differential current analog input 0...20 mA
□ 1 software-configurable voltage (⎓ 0-10 V) or current (0...20 mA) analog input
□ 2 software-configurable voltage (⎓ ± 10 V, --- 0-10 V) or current (0...20 mA) analog outputs
□ 1 relay logic output
□ 4 x 24 V ⎓ positive logic ("*Source*") or negative logic ("*Sink*") inputs
□ 2 x 24 V ⎓ open collector positive or negative logic outputs
□ 1 input for 6 PTC probes
□ 1 frequency control input

The Altivar 61 variable speed drive can only take one I/O extension card with the same reference.
Please refer to the compatibility table on page 60674/11.

References

Description	Type of I/O						Reference	Weight
	Logic input	Logic output	Analog input	Analog output	Input for PTC probes *(1)*	Frequency control input		kg
Logic I/O card	4	3	–	–	1	–	**VW3 A3 201**	0.300
Extended I/O card	4	3	2	2	1	1	**VW3 A3 202**	0.300

(1) This PTC probe input must never be used to protect an ATEX motor in applications in explosive atmospheres. Please refer to the ATEX guide which is available on our website "www.schneider-electric.com".

Variable speed drives
Altivar 61
Option: multi-pump cards

Presentation

The Altivar 61 drive provides an automation solution that is ideal for the requirements of water treatment:
■ It incorporates all the application functions for managing your pumps, such as: sleep, wake-up, zero flow detection, fluid absence detection, underload or overload detection, PID regulator
■ It is used to adjust the operating point of pumps using control profiles
■ It protects your pumps:
motor thermal protection, PTC management, low speed detection and time delay.

Multi-pump cards adapt the operation of the drive to the specific requirements of the installation.
They reduce costs and increase the service life of equipment by means of intelligent management of the operating time of each pump.
Various predefined configurable applications are sold by Schneider Electric and its partners.

In order to protect our know-how, it is not possible to transfer the program from the card to the PC.

A single multi-pump card can be installed in the Altivar 61. It can be combined with another option card (I/O extension or communication). Please refer to the compatibility table on page 60674/11.
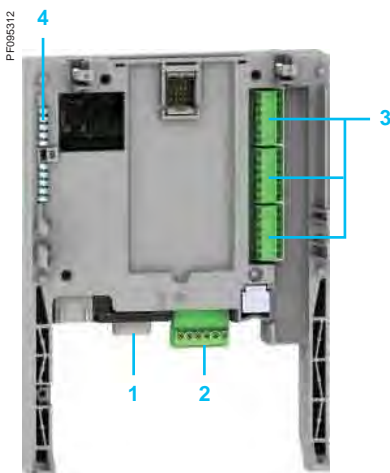
Each multi-pump card consists of:
■ 10 x 24 V ⎓ logic inputs, 2 of which can be used for 2 counters or 4 of which can be used for 2 incremental encoders
■ 2 x 0…20 mA current analog inputs, impedance 250 Ω
■ 6 x 24V ⎓ open collector positive logic ("Source") outputs
■ 2 x 0…20 mA current analog outputs, impedance 500 Ω
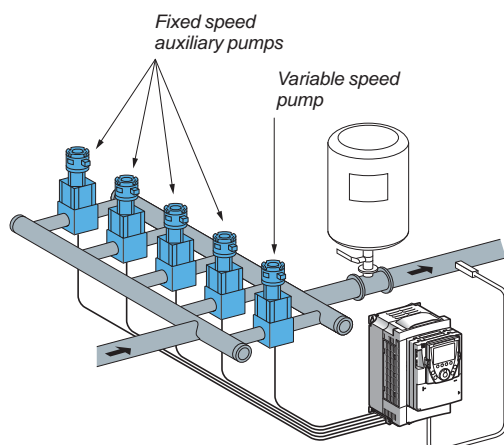■ A master port for the CANopen machine bus

If the power consumption does not exceed 200 mA, this card can be powered by ATV 61H●●●●● drives. Otherwise, an external 24 V ⎓ power supply must be used. ATV 61W●●●N4A24 variable speed drives incorporate a 24 V ⎓ power supply, allowing additional consumption of 250 mA.

Note*: It is recommended that an OsiSense XM electronic pressure sensor, type XML F or XML G, is added to the installation. Please consult our "Global Detection - Electronic and electromechanical sensors" specialist catalogue or our website "www.schneider-electric.com".*

Description

1 9-way male SUB-D connector for connection to the CANopen machine bus.

2 Connector with removable screw terminals, 6 contacts at intervals of 3.81 for the 24 V ⎓ power supply and 4 logic inputs.

3 3 connectors with removable screw terminals, 6 contacts at intervals of 3.81 for 6 logic inputs, 6 logic outputs, 2 analog inputs, 2 analog outputs and 2 commons.

4 5 LEDs:
■ 1 to indicate the presence of the 24 V ⎓ power supply
■ 1 to indicate a program execution fault
■ 2 to indicate the CANopen machine bus communication status
■ 1 controlled by the application program

PF095312

Description (continued),
references

Variable speed drives
Altivar 61
Option: multi-pump cards

Fixed speed auxiliary pumps

Variable speed pump

Example of configuration of a pumping system with the VW3 A3 502 multi-pump card

VW3 A3 502 multi-pump card

The **VW3 A3 502** multi-pump card ensures compatibility of pump applications developed for an Altivar 38 drive with an Altivar 61, without reprogramming.

With this card, a complete pumping installation (up to 5 pumps) can be controlled with a single Altivar 61, providing constant pressure.

It incorporates the following operating modes:
■ Single or multiple variable
■ Single or multiple variable with changeover of auxiliary pumps
■ Single or multiple variable with limitation of operating time between pumps
These two operating modes can be combined.

Applications

It is specially designed for applications such as:
■ Constant pressure water distribution and pumping systems
■ Booster stations

VW3 A3 503 "Water solution" multi-pump card

The **VW3 A3 503** multi-pump card does not provide compatibility with pump applications developed for an Altivar 38 drive.

With this card, a complete pumping installation (up to 4 pumps) can be controlled with a single drive, providing constant pressure.

It incorporates the single variable function as well as the "Jockey" management function which is primarily used to manage booster or priming pumps. It also compensates for losses in installations.

Applications

It is specially designed for applications such as:
■ Irrigation stations
■ Sprinkling stations

Continuity of service for your installation

If a pump is faulty (information on the LIx logic input) it is not taken into consideration and the start and stop conditions are provided by the other pumps.

Each pump can:
■ Display the operating time
■ Reset the counter
■ Save the operating times

Each card also incorporates an "OFF" mode, used during maintenance operations.

References

Description		Reference	Weight kg
Multi-pump card	Equipped with one 9-way male SUB-D connector	**VW3 A3 502**	0.320
"Water solution" multi-pump card	Equipped with one 9-way male SUB-D connector	**VW3 A3 503**	0.320

Variable speed drives
Altivar 61
Option: "Controller Inside" programmable card

Presentation

The "Controller Inside" programmable card is used to adapt the variable speed drive to specific applications by integrating control system functions.

Various predefined configurable applications are sold by Schneider Electric and its partners.
The PS 1131 software workshop is used for programming and debugging new applications, quickly and in an open-ended manner in accordance with standard IEC 61131-3.
In order to protect our know-how, it is not possible to transfer the program from the card to the PC.

A single "Controller Inside" programmable card can be installed in the Altivar 61 drive. It can be combined with another option card (I/O extension or communication). Please refer to the compatibility table on page 60674/11.

The "Controller Inside" programmable card has:
■ 10 x 24 V $\overline{}$ logic inputs, 2 of which can be used for 2 counters or 4 of which can be used for 1 incremental encoder and/or 3 counters.
■ 2 x 0…20 mA current analog inputs, impedance 500 Ω
■ 6 x 24 V $\overline{}$ positive logic ("Source") open collector outputs
■ 2 x 0…20 mA current analog outputs, impedance 500 Ω
■ A master port for the CANopen machine bus, for controlling other drives and communication with I/O modules and sensors
■ A PC port for programming using the PS 1131 software workshop

If the power consumption does not exceed 200 mA, the "Controller Inside" programmable card can be powered by Altivar 61 drives. Otherwise, an external 24 V $\overline{}$ power supply must be used.
ATV 61W●●●N4A24 variable speed drives incorporate a 24 V $\overline{}$ power supply, allowing additional consumption of 250 mA.

The "Controller Inside" programmable card can also use:
■ The drive I/O
■ I/O extension card I/O
■ The encoder interface card points counter
■ The drive parameters (speed, current, torque, etc.).

Description

1 RJ45 connector for connecting the PS 1131 software workshop via an RS 485 serial link.
Connection to the PC is via a cable and an RS 232/RS 485 converter included in the PC serial port connection kit, VW3 A8 106.

2 9-way male SUB-D connector for connection to the CANopen machine bus.

3 Connector with removable screw terminals, 6 contacts at intervals of 3.81 for the 24 V $\overline{}$ power supply and 4 logic inputs.

4 3 connectors with removable screw terminals, 6 contacts at intervals of 3.81 for 6 logic inputs, 6 logic outputs, 2 analog inputs, 2 analog outputs and 2 commons.

5 5 LEDs:
■ 1 to indicate the presence of the 24 V $\overline{}$ power supply
■ 1 to indicate a program execution fault
■ 2 to indicate the CANopen machine bus communication status
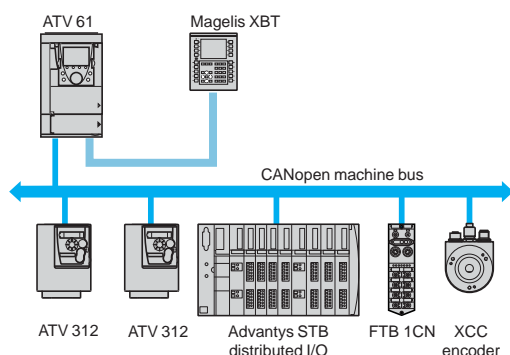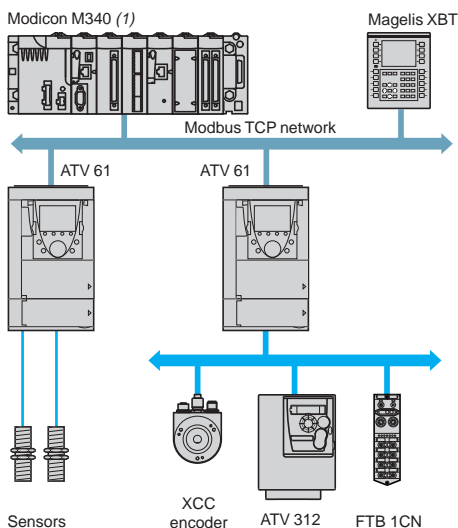■ 1 controlled by the application program

Schneider Electric

Presentation (continued)
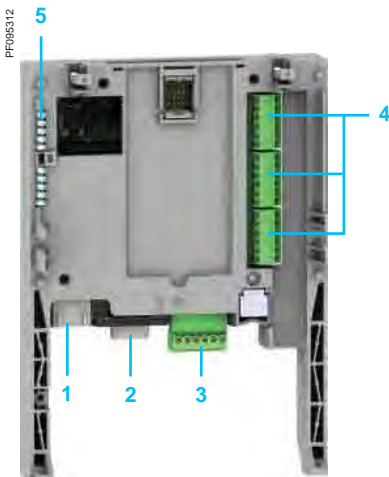
Variable speed drives
Altivar 61
Option: "Controller Inside" programmable card
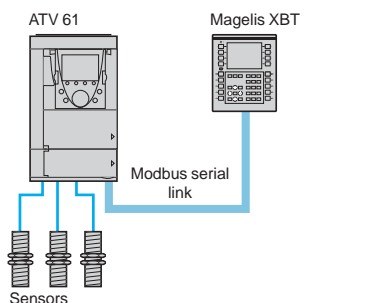
Independent machine with multiwire system

Dialogue

Human-machine dialogue with the application programmed in the "Controller Inside" programmable card is possible using:
■ The Altivar 61 graphic display terminal: The graphic terminal has a menu dedicated to the "Controller Inside" programmable card. This menu can be customized according to the application using the card's program.
■ A Magelis industrial HMI terminal, connected to:
- The drive's Modbus port
- The Modbus TCP network, if the drive is equipped with a Modbus TCP communication card.

Any industrial HMI terminal which supports the Modbus protocol can be used to display and modify the "Controller Inside" programmable card parameters.

Independent machine with CANopen machine bus

Master CANopen communication

The master CANopen port on the "Controller Inside" programmable card can be used to extend the I/O capacity and to control other CANopen slave devices.

Modular machine with Modbus TCP network

Communication with a PLC

The Altivar 61 drive, equipped with a "Controller Inside" programmable card, integrates easily into complex architectures.
Regardless of which bus, network or serial link is being used ((Modbus TCP, Modbus/Uni-Telway, PROFIBUS DP, INTERBUS, etc.), the PLC can communicate with the "Controller Inside" programmable card and the drive.
The periodic variables can still be configured as required.

Clock

A clock backed up by a lithium battery makes it possible to keep a log of events that have occurred.
When the "Controller Inside" programmable card is installed in the drive, drive faults are automatically time and date-stamped without any special programming.

(1) Please consult our "Modicon M340 Automation platform" specialist catalogue.

Variable speed drives
Altivar 61
Option: "Controller Inside" programmable card

PS 1131 software workshop

The PS 1131 software workshop conforms to international standard IEC/EN 61131-3 and includes all the functions for programming and setting up the "Controller Inside" programmable card.
It includes the configurator for CANopen.

It is designed for Microsoft Windows® 98, Microsoft Windows® NT 4.0, Microsoft Windows® Millennium, Microsoft Windows® 2000 Professional and Microsoft Windows® XP operating systems.
It benefits from the user-friendly interface associated with these operating systems:
■ Pop-up menus
■ Function blocks
■ Online help

The PS 1131 software workshop is available in both English and German.

The programming and debugging tools can be accessed via the application browser. This provides the user with an overview of the program and quick access to all the components of the application:
■ Program editor
■ Function blocks editor
■ Variables editor
■ Animation tables editor
■ Runtime screens editor

Modular structured programming

The PS 1131 software workshop is used to structure an application into function modules consisting of sections (program code), animation tables and runtime screens.
Each program section has a name. It is programmed in one of six available languages:
■ Ladder Diagram (LD)
■ Structured Text language (ST)
■ Grafcet language (SFC)
■ Instruction List language (IL)
■ Function Block Diagram (FBD)
■ Continuous Flow Chart (CFC)

To protect know-how or prevent any accidental modification, each section can be write-protected or read/write-protected.

Example of Ladder Diagram language programming

Function blocks

The PS 1131 software workshop has pre-programmed function blocks which make up the standard library.
Exchanges with the drive are performed by a function block available in the standard library.
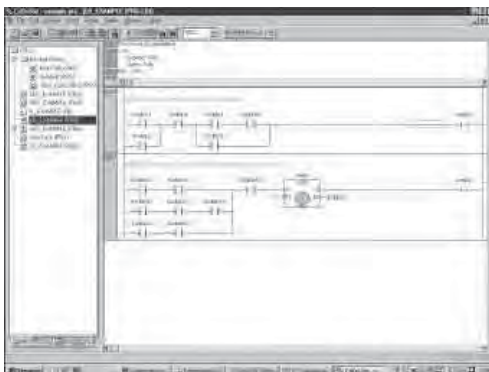
The software workshop also offers users the option of creating their own function blocks and thus creating a user library.
The user library is also a means of protecting the know-how contained in the algorithms, as it is possible to lock access to the user function blocks program.
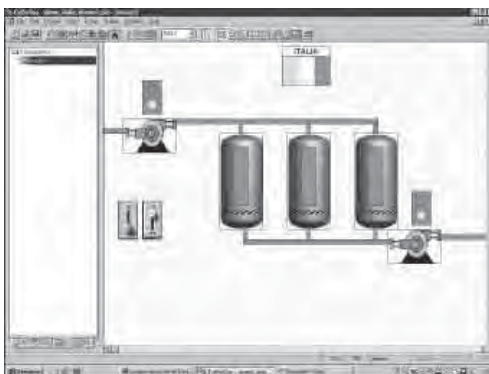
Debugging tools

The PS 1131 software workshop offers a complete set of tools for debugging the application:
■ Program execution for debugging (step-by-step execution, execution of a single cycle, etc.)
■ Realtime animation of the program with automatic display of the variables
■ Animation tables editor with the option of saving them
■ Oscilloscope (monitoring up to 20 variables)
■ Application runtime screens editor (graphic objects, messages, screen backgrounds, etc.)
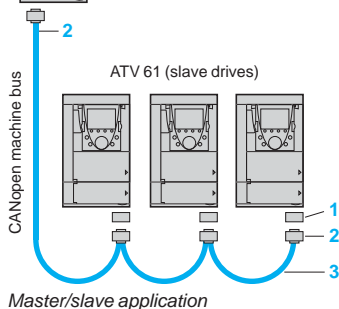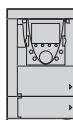■ Simulation function for testing the program without using the drive

Example of runtime screen

Schneider Electric

Variable speed drives
Altivar 61
Option: "Controller Inside" programmable card

ATV 61 (master drive)
+ VW3 A3 501 card

537199

CANopen machine bus

2

ATV 61 (slave drives)

1
2
3

Master/slave application

PF121625

VW3 CAN A71

PF105504

TSX CAN KCDF 180 T

References

Card

Description	Reference	Weight kg
"Controller Inside" programmable card equipped with one 9-way male SUB-D connector	**VW3 A3 501**	0.320

Connection accessories

Description	Item no.	Length m		Weight kg
CANopen adaptor for mounting on the RJ45 socket in the drive control terminals. The adaptor provides a 9-way male SUB-D connector conforming to the CANopen standard (CIA DRP 303-1)	**1**	–	**VW3 CAN A71**	–
CANopen connector 9-way female SUB-D with line terminator that can be disabled	**2**	–	**TSX CAN KCDF 180T**	–

Cables

Description	Item no.	Length m		Weight kg
CANopen cables Standard cable, C€ marking. Low smoke zero halogen. Flame retardant (IEC 60332-1)	**3**	50	**TSX CAN CA 50**	4.930
		100	**TSX CAN CA 100**	8.800
		300	**TSX CAN CA 300**	24.560
CANopen cables UL certification, C€ marking. Flame retardant (IEC 60332-2)	**3**	50	**TSX CAN CB 50**	3.580
		100	**TSX CAN CB 100**	7.840
		300	**TSX CAN CB 300**	21.870
CANopen cables Cable for harsh environments *(1)* or mobile installations, C€ marking. Low smoke zero halogen. Flame retardant (IEC 60332-1)	**3**	50	**TSX CAN CD 30**	3.510
		100	**TSX CAN CD 100**	7.770
		300	**TSX CAN CD 300**	21.700

PS 1131 software workshop

Description	Reference	Weight kg
PS 1131 software workshop supplied on CD-ROM	*(2)*	–
Connection kit for PC serial port including various accessories such as: ■ One 3 m cable with two RJ45 connectors ■ One RS 232/RS 485 converter with one 9-way female SUB-D connector and one RJ45 connector	**VW3 A8 106**	0.350

(1) Harsh environments:
  - Resistance to hydrocarbons, industrial oils, detergents, solder splashes
  - Relative humidity up to 100%
  - Saline atmosphere
  - Significant temperature variations
  - Operating temperature between - 10°C and + 70°C
(2) The product reference is provided during the "Controller Inside" programmable card training course. Please contact our Customer Care Centre.